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Amendments to the Claims

Please amend the claims as follows:

1) ~~1.~~(currently amended)—A method of making optical quality components~~films~~, comprising ~~the steps of~~:

a) depositing silica ~~a~~ buffer layers respectively on a front and back face of ~~first silica film on~~ a silicon wafer by PECVD (Plasma Enhanced Chemical Vapor Deposition) to provide a first structure in resistant to wafer warp during thermal processing ~~by PECVD (Plasma Enhanced Chemical Vapor Deposition)~~;

b) subjecting said first structure to a first thermal treatment to reduce optical absorption and compressive stress in said buffer layers;

c) said first thermal treatment comprising:

i) subjecting said first structure to a temperature that ramps up from a stabilization temperature to a temperature of at least 800°C to decrease compressive stress in said buffer layers from an initial compressive value;

ii) continuing to subject said first structure to said temperature of at least 800°C for a period of at least 30 minutes to further decrease compressive stress in said buffer layers and reduce optical absorption; and

iii) ramping down said temperature to which said first structure is subjected to a final temperature such that said first structure undergoes an elastic deformation wherein the compressive stress in said buffer layers increases linearly to a final compressive value that is less than said initial compressive value;

d) depositing a silica core layer on said buffer layer on said front face of the wafer by PECVD to form a second structure; and

e) subjecting said second structure to a second thermal treatment to reduce optical absorption and tensile stress in said cores layer;

f) said second thermal treatment comprising:

i) subjecting said second structure to a temperature that ramps up to a temperature of at least 600°C to relieve tensile stress in said core layer from an initial tensile value;

ii) continuing to subject said second structure to a temperature of at least 600°C for a period of at least 30 minutes to reduce optical absorption; and

iii) ramping down said temperature to which said second structure undergoes elastic deformation wherein said tensile stress in said core layer decreases linearly to a final tensile value that is less than said initial tensile value.

~~subjecting the wafer to a first heat treatment to reduce optical absorption, wafer warp, and compressive stress;~~

~~depositing a second silica film on the wafer by PECVD; and~~

~~subsequently subjecting the wafer to a second heat treatment to reduce optical absorption, wafer warp and tensile stress.~~

2.(cancelled)

3.(cancelled)

4.(currently amended) A method as claimed in claim ~~3~~1, wherein ~~the duration of said first phase~~said first structure is maintained at said stabilization temperature for a period of from ~~lies in the range~~ 1.3 to 130 minutes.

5.(currently amended) A method as claimed in claim ~~3~~1, wherein said first structure is maintained at said stabilization temperature for a period of ~~the duration of said first phase is~~ about 13 minutes.

6.(currently amended) A method as claimed in claim 3, wherein the temperature ~~in said second~~of said first structure ~~phase~~ is ramped up in said first thermal treatment at a rate lying in the range 1°C/min to 25°C/min.~~.~~

7.(currently amended) A method as claimed in claim ~~3~~6, wherein the temperature ~~in said second phase~~of said first structure in said first thermal treatment is ramped up at 5°C/min.

8.(currently amended) A method as claimed in claim ~~3~~1, wherein said ~~first predetermine~~ stabilization ~~d t~~temperature lies in the range 300°C to 700°C.

9.(currently amended) A method as claimed in claim ~~7~~1, wherein said ~~first predetermined~~stabilization temperature is about 400°C.

10.(currently amended) A method as claimed in claim 8, wherein the ~~temperature~~ temperature of said first structure ~~in said fourth phase~~ is ramped down at a rate in the range 1°C/min. to 25°C/min.

11.(currently amended) A method as claimed in claim 9, wherein the temperature of said first structure ~~in said fourth phase~~ is ramped down at 2.5°C/min.

12.(currently amended) A method as claimed in claim ~~3~~1, wherein in said first thermal treatment said first structure is maintained at ~~second predetermined~~a temperature that lies in the range of 800°C to 1,300°C for at least 30 minutes.

13.(currently amended) A method as claimed in claim ~~11~~1, wherein in said first thermal treatment said ~~second predetermined temperature~~first structure is maintained at a temperature of about 900°C for at least 30 minutes.

14.(currently amended) A method as claimed in claim 1, wherein said first and second ~~heat~~ thermal treatments are carried out in the presence of an inert gas.

15.(currently amended) A method as claimed in claim ~~1,~~14, wherein said inert gas is selected from the group consisting of: nitrogen, ~~N_2,~~ oxygen, ~~O_2,~~ hydrogen, ~~H_2,~~ water vapour, ~~H_2O,~~ argon, ~~Ar,~~ fluorine, ~~F_2,~~ carbon tetrafluoride, ~~CF_4,~~ nitrogen trifluoride, ~~NF_3,~~ and hydrogen peroxide~~, H_2O_2~~.

16.(currently amended) A method as claimed in claim ~~13~~14, wherein ~~the flow rate of~~ said inert gas has a constant flow rate~~is constant~~.

17.(currently amended) A method as claimed in claim ~~15~~16, wherein ~~the~~ said flow rate of said inert gas lies in the range 1 liter/min. to 100 liters/min.

18.(currently amended) A method as claimed in claim ~~3~~1, wherein in said ~~the~~ second ~~heat~~ thermal treatment ~~follows a predetermined temperature profile~~said second structure is maintained at a temperature lying in the range 600 to 1300°C for at least 30 minutes.

19.(currently amended) A method as claimed in claim ~~17~~18, wherein wherein in said second thermal treatment said second structure is maintained at a temperature of 900°C for at least 30 minutes. ~~said second profile follows the same form as said first profile.~~

20.(currently amended) A method as claimed in claim 10, wherein deposition is carried out in a seven-dimensional space wherein ~~the~~ flow rates of raw material gas, oxidation gas, carrier gas and dopant gas are set at fixed values, ~~the~~ a total deposition pressure is set at a fixed value, a post-deposition thermal treatment is carried out, said post deposition treatment is ~~at a temperature~~ selected from a group consisting of a set of predetermined ~~temperatures~~treatments,

and ~~the~~ observed FTIR (Fourier Transform Infrared Spectroscopy) characteristics ~~of the resulting product~~ are used to ~~determine~~ select said~~the~~ post deposition thermal treatment ~~temperature~~from said group of predetermined treatments.

21.(currently amended) A method as claimed in claim 19, wherein the raw material gas is SiH_4, the oxidation gas N_2O, the carrier gas is N2, and the dopant gas is PH_3, the SiH_4 flow rate ~~a first independent variable, the SiH_4 flow,~~ is fixed at about 0.20 std litre/min; the N_2O flow rate ~~a second independent variable, the N_2O flow,~~ is fixed at about 6.00 std litre/min; the N_2 flow rate ~~a third independent variable, the N_2 flow,~~ is fixed at about 3.15 std litre/min; the PH_3 flow rate~~a fourth independent variable, the PH_3 flow,~~ is fixed at about 0.50 std litre/min; the total deposition pressure ~~a fifth independent variable, the total deposition pressure,~~ is fixed at about 2.60 Torr; a ~~sixth independent variable,~~ the post-deposition thermal treatment is ~~varied among the following choices~~selected from the group consisting of: 30 minutes duration thermal treatment in a nitrogen ambient at 600°C; 30 minutes duration thermal treatment in a nitrogen ambient at 700°C; 30 minutes duration thermal treatment in a nitrogen ambient at 750°C; 30 minutes duration thermal treatment in a nitrogen ambient at 800°C; 30 minutes duration thermal treatment in a nitrogen ambient at 850°C; and 30 minutes duration thermal treatment in a nitrogen ambient at 900°C.

22.(cancelled)

23.(cancelled)

24.(currently amended) A method as claimed in claim ~~2~~21, wherein a protective layer is deposited on the back face of the buffer layer on the back side of the wafer and a compensating layer is deposited on the front face of the wafer.

25.(currently amended) A method as claimed in claim 24, wherein the protective layer and compensating layer are silicon nitride.

26.(cancelled)

27.(cancelled)

28. (cancelled)

29.(cancelled)

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30.(cancelled)

31.(cancelled)